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PTO/SB/21 (08-00)

Approved for use through 10/31/2002, OMB 0651-0031 U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number, 10/519,128 Application Number Not yet assigned Filing Date TRANSMITTAL First Named Inventor **FORM** LEE, RANDALL J. Group Art Unit Not yet assigned (to be used for all correspondence after initial filing) Examiner Namo Unassigned Aflorney Docket Number **UCAL-253US1** Total Number of Pages in This Submission ENCLOSURES (check all that apply) Fee Transmittal Form Assignment Papers After Allowance Communication (for an Application) to Group Fee Attached Drawing(s) Appeal Communication to Board Amendment / Reply of Appeals and Interferences Licensing-related Papers After Final Appeal Communication to Group (Appeal Notice, Brief, Roply Briof) Petition Affidavits/declaration(s) \boxtimes Copy of Communication from Extension of Time Request Petition to Convert to a Patent Office on 5/23/05 Provisional Application Express Abandonment Request Power of Attorney, Revocation Response to Communication Change of Correspondence Information Disclosure Statement Address \boxtimes Other Enclosure(s) (please Terminal Disclaimer Certified Copy of Priority identify below): **Documents** Request for Refund Transmittal, Application Information Response to Missing Parts/ Sheet, Petition to Revive, Preliminary Incomplete Application Amend, copy of first page of published CD, Number of CD(s) PCT appin. WO 03/094697, copy of the Response to Missing Parts return postcard date stamped by the under 37 CFR 1.52 or 1.53 Patent Office on 12/22/04 & express mail label (16 pgs.) Remarks RECEIVED SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT 3 1 MAY 2005 Firm CAROL L. FRANCIS, Reg. No. 36,513 Individual Name Legal Staff Signature International Division Date May 31, 2005 CERTIFICATE OF FACSIMILE TRANSMISSION I hereby certify that this correspondence is being facsimile filed under 37 C.F.R. §§ 1.6(d) and 1.8(a)(1)(b) addressed to: (571) 273-0459 on this date: May 31, 2005 Typed or printed name Martha Cisneros Signature

Burden Hour Statement: This form is estimated to take .2 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450 Alexandria VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: P.O. Box 1450 Alexandria VA 22313-1450.



RESPONSE TO COMMUNICATION

Address to:
Mail Stop NO FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Customer Number	24353	
Atty, Docket No.	UCAL-253US1	
Application Number	10/519,128	
Int'l Appl. No.	PCT/US03/14304	
Int'l Filing Date	May 7, 2003	
First Named Inventor	LEE, RANDALL J.	
Examiner Name	N/A	
Group Art Unit	N/A	

Sir:

In response to our Status Inquiry of April 27, 2005, the Patent Office sent a Communication dated May 23, 2005 indicating that the **Petition to Revive an Application Abandoned**Unintentionally, we filed on **December 22, 2004**, had not yet reached the Office of PCT Legal Administration. The Communication strongly suggested that a copy of the petition be faxed to the Office of PCT Legal Administration to the number above.

Accordingly, with this response we enclose copies of the following as filed with the U.S. Patent and Trademark Office On December 22, 2004::

- 1) Transmittal (4 pages)
- 2) Application Information Sheet (2 pages)
- 3) Petition to Revive an Application Abandoned Unintentionally (1 page)
- 4) Preliminary Amendment (6 pages)
- 5) the first page of PCT international application serial no. PCT/US03/14304, filed May 7, 2003, and published as PCT application WO 03/094697

We also enclose:

- a copy of the return postcard date stamped by the Patent Office on December 22, 2004 and noting the Express Mail label no., which returned postcard acknowledges receipt of the documents filed on December 22, 2004, and assigned the application U.S. application serial no. 10/519,128
- 7) a copy of the Communication dated May 23, 2005

Atty Dkt. No.: UCAL-253US1

USSN: 10/519,128

Applicants respectfully request consideration of the Petition and further request to be informed of the current status of the petition filed for this application.

Respectfully submitted,

BOZICEVIC, FIELD & FRANCIS LLP

Date: May 31, 2005

Carol L. Francis

Registration No. 36,513

BOZICEVIC, FIELD & FRANCIS LLP 1900 University Avenue, Suite 200 East Palo Alto, California 94303

Telephone: (650) 327-3400 Facsimile: (650) 327-3231

PTO-1300 (Rev. 10-2004)
proved for use through 3/31/2007, OME 0651-0021
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

	RANSMITTAL LETTER TO TH	E UNITED STATES	ATTORNEY'S DOCKET NUMBER UCAL-253US1
	DESIGNATED/ELECTED OFF CONCERNING A FILING UND		U.S. APPLICATION NO. (If known, see 37 CFR 1.5)
	ATIONAL APPLICATION NO.	INTERNATIONAL FILING DATE	PRIORITY DATE CLAIMED
TITLE (OF INVENTION		May 8, 2002
APPLIC	ODS AND COMPOSITIONS FOR COR ANT(S) FOR DO/EO/US	RECTION OF CARDIAC CON	DUCTION DISTURBANCES
	ANDALL J. nt herewith submits to the United States i	Designated/Elected Office (DO/E	O/US) the following items and other information:
1. 🖂	This is a FIRST submission of items concern		Ords) the following flems and other information:
2. []	This is a SECOND or SUBSEQUENT submi		EV521025182U
3. 🖾			371(f)). The submission must include items (5), (6), (9) and
4. 🔯	The US has been elected (Article 31),		
5. 🔀	A copy of the International Application as file	ed (35 U.S.C. 371(c)(2))	
	_	ot communicated by the Internationa	Bureau).
	b. has been communicated by the Inte		
	c. 🛛 is not required, as the application wa	as filed in the United States Receiving	ı Office(RO/US)
6. 🔲	An English language translation of the Intern	national Application as filed (35 U.S.C	. 371(c)(2)).
	a. Is attached hereto,		
	b. has been previously submitted under	r 35 U.S.C. 154(d)(4).	
7. 🛛	Amendments to the claims of the internations	al Application under PCT Article 19 (3	35 U.S.C. 371(c)(3))
		not communicated by the Internation	el Bureau).
	b. have been communicated by the Inte		
	c. have not been made; howover, the ti		s has NOT expired.
	d. A have not been made and will not be		
8. 🔲	An English language translation of the amend		de 19 (35 U.S.C. 371(c)(3)).
9, []	An oath or declaration of the inventor(s) (35 t		
0. 🔲	An English language translation of the annex Article 36 (35 U.S.C, 371(c)(5)).	es of the International Preliminary Ex	amination Report under PCT
	11 to 20 below concern document(a) or info	ormation included:	•
1. 🔲	An Information Disclosure Statement under 3	7 CFR 1.97 and 1.98.	
2.	An assignment document for recording. A se	parate cover sheet in compliance wit	h 37 CFR 3.28 and 3.31 is included.
3. 🛭	A preliminary amendment.		0 1416
4. 🖂	An Application Data Sheet under 37 CFR 1.79	6.	B12/22/0f
5. 🔲	A substitute specification.		
5. 🔲	A power of attorney and/or address letter.		
7. 🗌	A computer-readable form of the sequence list	sting in accordance with PCT Rule 13	ter.2 and 35 U.S.C. 1.821 - 1.825.
з. 🔲	A second copy of the published international a		
a. 🔲	A second copy of the English language transit	ation of the international application u	inder 35 U.S.C. 154(d)(4).
). 🛛	Other items or information: Petition to Revi		• • • • • • • • • • • • • • • • • • • •

Other items or information: Petition to Revive an Application Abandoned Unintentionally and Postcard

This cossection of information is required by 37 CFR 1.414 and 1.491-1.492. The information is required to obtain or relain a benefit by the public, which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 15 minutes to complete, including gathering information, preparing, and submitting the completed form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of lime you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Pstent and Tradamark Office, U.S. Department of Commerce, P.O. Box 1450, Aloxandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Mail Stop PCT, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

PYO-1390 (Rev. 10-2004)

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U.S. APPLICATION NO.	(If known, see 37 CFR 1.5)	INTERNATIONAL APPL	LICATION NO.	ATTORNEY'S	DOCKET NUMBER
		US03/14304		UCAL-253U	
21. X The following fees	are submitted:			CALCULATIONS	PTO USE ONLY
	EE (37 CFR 1.492(a) (1) - (5)):		1		
nor international search	reliminary examination fee (37 Cl th fee (37 CFR 1.445(s)(2)) paid t rch Roport not prepared by the EF	to USPTÓ	\$1110.00		
USPTO but Internation:	ry examination fee (37 CFR 1.482 hal Search Report prepared by the	ne EPO or JPO	\$950.00		
but International search	uy examination fee (37 CFR 1.483 h fee (37 CFR 1.445(a)(2)) paid to	lo USPTO	\$790.00		
but all claims did not sa	ry examination fee (37 CFR 1,482 atisfy provisions of PCT Article 33	3(1)-(4)	\$750.00		
and all claims satisfied	provisions of PCT Article 33(1)-((4)			
	TER APPROPRIATE BAS			\$ 750.00	
from the earliest claimed p	furnishing the oath or declaration priority date (37 CFR 1.492(c)).			\$	
CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE	\$	
Total Claims	12 - 20 =		x \$18.00	\$	
Independent Claims	4 - 3=	1	× \$88.00	\$ 88.00	
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		OTAL OF ABOVE CA		\$	
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			SUBTOTAL =	\$	
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Petition to Revive an A	pplication Abandoned Unin	oned Unintentionally Under 37 C.F.R. 1.137(b)+		\$ 1,500.00	
		TOTAL FEES ENCLOSED ≈		\$ Amount to be	
			j	Amount to be refunded:	\$
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overpayment to	Deposition Account No. 30-0816	 A duplicate copy of this. 	sheel is enclosed.		
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NOTE: Where an approp	priate time limit under 37 CFR ore the application to pending a	1.494 or 1.495 has not i	seen met, a petition to	1001ye (37 CFR 1.13	j7(a) ∳ r (b)) must be
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1900 University Aven East Palo Alto, Califo				. Francis	Janianianna
94303	,,,,		NAME.	FIGHUS	12/22/2004
			<u>36,513</u> REGISTR	RATION NUMBER	
DRM PTO-1390 (REV. 10-2004)		Page 2 of 2		~ ***~	

PTO-1390 (Rev. 10-2004) proved for use through 3/31/2007, OMB 0651-0021 U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1985, no persons are require

T	RANSMITTAL LETTER TO T	HE UNITED STATES	to a conection of information unless it displays a valid OMB control num ATTORNEY'S DOCKET NUMBER UCAL-253US1
	DESIGNATED/ELECTED OF CONCERNING A FILING UN		U.S. APPLICATION NO. (If known, 899 37 CFR 1.5)
	NATIONAL APPLICATION NO.	INTERNATIONAL FILING DATE	PRIORITY DATE CLAIMED
TITLE	OF INVENTION	5/7/2003	May 8, 2002
APPLI	CANT(S) FOR DO/EO/US	DRRECTION OF CARDIAC CON	IDUCTION DISTURBANCES
	RANDALL J.	·	
			O/US) the following items and other information;
1. 🛛	This is a FIRST submission of items conc		
2.	This is a SECOND or SUBSEQUENT sub		
3. 🖾	This is an express request to begin natio (21) indicated below.	nal examination procedures (35 U.S.C.	371(f)). The submission must include items (5), (6), (9) and
4. 🛛	The US has been elected (Article 31).		
5. 🔯	A copy of the international Application as	filed (35 U.S.C. 371(c)(2))	
	a. Is attached horoto (roquired only i	f not communicated by the international	Bureau).
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1	c. 🛛 is not required, as the application	was filed in the United States Receiving	Office(RO/US)
6. 🗌	An English language translation of the inte	emalional Application as filed (35 U.S.C.	. 371(c)(2)).
	a. Is attached hereto.		
	b.		
7. 🛭	Amendments to the claims of the Internation		
		if not communicated by the internations	al Bureau).
	b. have been communicated by the I		
		time limit for making such amendment	s has NOT expired,
. —	d. A have not been made and will not b		
8. []	An English language translation of the ame		te 19 (35 U.S.C. 371(c)(3)).
9. 🗌	An oath or declaration of the inventor(s) (3:	5 U.S.C. 371(c)(4)).	
10, 🔲	An English language translation of the anno Article 36 (35 U.S.C. 371(c)(5)).	exes of the International Preliminary Ex	amination Report under PCT
itema	11 to 20 below concern document(s) or in	nformation included;	
11. 🔲	An information Disclosure Statement under	37 CFR 1.97 and 1.98.	
12. 🔲	An assignment document for recording. A	separate cover sheet in compilance with	1 37 CFR 3.28 and 3.31 Is included.
13. 🔀	A preliminary amendment.		
14, 🛛	An Application Data Sheet under 37 CFR 1.	76.	
15. 🔲	A substitute specification,		
16. 🔲	A power of attorney and/or address letter.		
17. 🔲	A computer-readable form of the sequence	listing in accordance with PCT Rule 134	er.2 and 35 U.S.C. 1.821 - 1.825
a. 🔲	A second copy of the published international		
9. 🗌	A second copy of the English language trans		
0. 🛛	Other items or information: Petition to Re-		

This collection of Information is required by 37 CFR 1.416 and 1.491-1.492. The Information is required to obtain or retain a best seff by the public, which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 15 minutes to complete, including gathering information, preparing, and submitting the completed form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time yet require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Dox 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Mail Stop PCT, Commissioner for Patents, P.O. Page 1 of 2

PTO-1390 (Rev. 10-2004)

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U.S. APPLICATION NO.	(If known, see 37 CFR 1.5)	INTERNATIONAL APP	LICATION NO.	ATTORNEY'S D	OCKET NUMBER
		US03/14304	- <u> </u>	UCAL-253US1	
21. The following fees	are submitted:		·	T	PTO USE ONLY
BASIC NATIONAL FE	EE (37 CFR 1.492(a) (1) - (5)):		,		
Neither International pro	eroliminary examination fee (37 Ci ch fee (37 CFR 1.445(a)(2)) paid rch Report not prepared by the Ef	Lin LISPTO	\$1110.0D		
USPTO but Intomations	ary examination fee (37 CFR 1.48) nal Search Report prepared by the	he EPO or JPO	\$950,00		
but international soarch	rry examination fee (37 CFR 1.48; th fee (37 CFR 1.445(a)(2)) paid to	to USPTO	\$790.00		
but all claims did not sa	ry examination fee (37 CFR 1.482 atisfy provisions of PCT Article 33	33(1)-(4)	\$750.00		
and all claims satisfied	ry examination fee (37 CFR 1.48) provisions of PCT Article 33(1)-(<u>(4)</u>			
	TER APPROPRIATE BAS		·	\$ 750.00	
from the earliest claimed p	furnishing the cath or declaration priority date (37 CFR 1.492(e)).			\$	
CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE	5	DV
Total Claims	12 - 20 =		× \$18,00	5	PI
Independent Claims	4 - 3 =	1	x \$88.00	\$ 88.00	1
MULTIPLE DEPENDENT C			+ \$300.00	\$	1
		OTAL OF ABOVE CA		\$	
Applicant claims small by 1/2.	all entity status. See 37 CFR 1.27	7. The fees indicated above	e are reduced	\$	
1 2120 6			SUBTOTAL =	\$	
Processing fee of \$130.00 claimed priority date (37 Cl	Processing fee of \$130.00 for furnishing the English translation later than 30 months from the earliest claimed priority date (37 CFR 1.492(f)).			\$	T
	TOTAL NATIONAL FEE =			\$	
Petition to Revive an A	Application Abandoned Unin			\$ 1,500.00	
		TOTAL FEF	ES ENCLOSED =	\$	1
				Amount to be refunded:	15
				Amount to be charged:	\$2,338.00
	amount of \$ to cover the al				<u></u>
b. Please charge m A duplicate copy	my Deposit Account No. <u>50-0815</u> by of this sheet is enclosed.	5 in the amount of \$2,338.			-
c. The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposition Account No. <u>50-0815</u> . A duplicate copy of this sheet is enclosed.					
d. Fees are to be ch Information sho	charged to a credit card. WARNI rould not be included on this fo	IING: Information on this form. Provide credit card in	orm may become public. Iformation and authorizati	tion on PTO-2038.	
NOTE: Where an appropriated and granted to restor	priate time limit under 37 GFR ore the application to pending s	1 4 404 as 4 405 been and b) 9 r (b)) must be
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Bozicevic, Field & Fra 1900 University Avenu	nue, Suite 200		SIGNATU	JRE JUNEY	
East Palo Alto, Califor 94303	mia		Carol L. NAME	Francis	/ 12/22/2004
			36,513	PATION NUMBER	
RM PTO-1390 (REV. 10-2004)		Gree 2 - 4 2			

Page 2 of 2

APPLICATION INFORMATION

Application Type:: **Utility Application**

Title:: METHODS AND COMPOSITIONS FOR CORRECTION OF CARDIAC

7

No

CONDUCTION DISTURBANCES

Attorney Docket Number:: UCAL-253US1

Request for Non-Publication?::

Assignee for Publication::

Total Drawing Sheets:: Small Entity?::

Large License US Govt. Agency:: No Contract or Grant Numbers::

Sequence Submission?:: Computer Readable Form (CRF)?::

INVENTOR INFORMATION

Inventor One Given Name:: RANDALL J.

Family Name:: LEE

Postal Address Line One:: University of California, Cardiac Electrophysiology, Room MU429

Postal Address Line Two:: 500 Parnasus Avenue

City::

San Francisco State or Province::

California Postal or Zip Code:: 94143 Citizenship Country:: USA

CORRESPONDENCE INFORMATION

Correspondence Customer Number:: 24353

Telephone One:: (650) 327-3400 Telephone Two:: (650) 833-7713

Fax:: (650) 327-3231

Electronic Mail:: francis@bozpat.com

REPRESENTATIVE INFORMATION

Representative Customer Number:: 24353

PAGE 1 INITIAL 12/22/04





This application is a:: > Application One::

Filing Date::

Which claims priority:: Filing Date::

and

Claims priority::

Filing Date::

Claims priority:: Filing Date::

371 National Phase Application of... PCT/US03/14304 (Published as WO

03/094697) May 7, 2003

60/379,140 May 8, 2002

10/291,202

November 7, 2002

PCT/US02/35932 November 7, 2002



EXPRESS MAIL NO. EV 521025182 US

Petition to Revive an Application Abandoned Unintentionally Under 37 C.F.R. §1.137(b)	Attorney Docket	UCAL-253US1		
	First Named Inventor	Lee, Randall J.		
	Int'l Appl. No.	PCT/US03/14304		
Address to; Mail Stop: PCT	Int'l Filing Date	May 7, 2003		
	Group Art Unit	N/A		
Commissioner for Patents	Examiner Name	N/A		
P.O. Box 1450 Alexandria, VA 22313-1450	Title	METHODS AND COMPOSITIONS FOR CORRECTION OF CARDIAC CONDUCTION DISTURBANCES		

Sir:

Applicants hereby petition under 37 CFR § 1.137(b) to revive the above application, which was abandoned as of November 9, 2004 for failure to enter the National Phase under 35 U.S.C. §371 within 30 months of the earliest priority date of PCT/US03/14304.

As required by 37 C.F.R. § 1.137(b)(1), this petition is filed with an application which claims priority to the above-referenced application under 35 U.S.C. §371.

Statement. The entire delay in filing the required reply from the due date for the required reply until the filing of a grantable petition under 37 C.F.R. 1.137(b) was unintentional. Specifically, the entire delay in filing a U.S. National Phase application from the 30 month due date of November 8, 2004 until the filing of the present petition was unintentional. (37 C.F.R. § 1.137(b)(3)).

No Terminal Disclaimer is required since the subject application was filed on or after June 8, 1995. (37 C.F.R. § 1.137(b)(4).

The Commissioner is authorized to charge the large entity petition fcc of \$1,500.00 as set forth in 37 C.F.R. § 1.17(m), and charge any shortages of fees or credit any overages, to Deposit Account No. 50-0815 (37 C.F.R. § 1.137(b)(2)).

Date: / \/

BOZICEVIC, FIELD & FRANCIS LLP 1900 University Avenue, Suite 200

East Palo Alto, California 94303

Telephone: (650) 327-3400 Facsimile: (650) 327-3231

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Respectfully submitted,

BOZICEVIC, FIELD & FRANÇIS LLP

By: __(

Carol L. Francis Registration No.

EXPRESS MAIL LABEL NO. EV 521025182 US



PRELIMINARY AMENDMENT Under CFR 1.115

Address to: Mail Stop Commissioner for Patents P.O. Box 1450 Alexandria, VA 22313-1450

Attorney Docket No.	UCAL-253US1
Confirmation No.	Not yet assigned
First Named Inventor	LEE, RANDALL J.
Application Number	Not yet assigned
Filing Date	Not yet assigned
Group Art Unit	Not yet assigned
Examiner Name	Not yet assigned
Title: "METHODS A	ND COMPOSITIONS FOR
CORRECTION	OF CARDIAC CONDUCTION

DISTURBANCES"

Sir:

Prior to the examination of the above-referenced application on the merits, please enter the amendments below.

32

Atty Dkt. No.: UCAL-253US1 USSN: Not yet assigned

AMENDMENTS TO THE SPECIFICATION

After the last page of the claims on page 41, insert as separately number page 42 the following abstract:

METHODS AND COMPOSITIONS FOR CORRECTION OF CARDIAC CONDUCTION DISTURBANCES

The invention provides methods for establishing electrical coupling between cardiomyocytes and recombinant cells which have been genetically engineered to express a connexin protein such as connexin 43 (Cx43) protein. The invention is based on the discovery that genetic modification of skeletal muscle cells to express a recombinant connexin, enables the genetically modified cells to establish electrocommunication with cardiac cells via gap junctions. The recombinant connexinexpressing cells can be used for repair of cardiac tissue and for treatment of cardiac disease by transplantation into cardiac tissue.

Atty Dkt. No.: UCAL-253US1 USSN: Not yet assigned

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A method of establishing an electrical connection between a recombinant mammalian cell and a myocardial cell, the method comprising:

contacting a myocardial cell with a recombinant mammalian fibroblast cell genetically modified to produce a connexin protein, said contacting being in a manner sufficient to provide for production of an electrical connection between the myocardial cell and the recombinant cell;

wherein an electrical connection between the recombinant cell and the myocardial cell is established.

2. - 5. (Canceled)

- 6. (Original) The method of claim 1, wherein the connexin protein is a connexin 43 protein.
- 7. (Currently Amended) A The method of claim 1, wherein said contacting comprises implanting the recombinant cell into myocardial tissue of a subject.
- 8. (Currently Amended) The method of claim 1, wherein after the electrical connection between the recombinant cell and the myocardial cell is established, the recombinant cell exhibits has similar conductive characteristics similar to that of the myocardial cell.

9. - 12. (Canceled)

Atty Dkt. No.: UCAL-253US1 USSN: Not yet assigned

13. (Currently Amended) A method of establishing an electrical connection between a recombinant skeletal-muscle fibroblast cell and a myocardial cell, the method comprising:

contacting a myocardial cell with a recombinant skeletal myoblast fibroblast cell genetically modified to express a recombinant connexin 43 protein, said contacting being in a manner sufficient to provide for production of an electrical connection between the myocardial cell and the recombinant skeletal myoblast fibroblast cell;

wherein an electrical connection between the recombinant skeletal-myoblast fibroblast cell and the myocardial cell is established so that the recombinant skeletal myoblast fibroblast cell has similar conductive characteristics as the of the myocardial cell.

14. (Currently Amended) A method for treating a cardiac conduction disturbance in a host, the method comprising:

introducing into cardiac tissue of a host a therapeutically effective amount of a recombinant mammalian fibroblast cell, which recombinant cell is genetically modified to express a connexin protein, said introducing being effective to establish an electrical connection between the recombinant cell and a myocardial cell of the host cardiac tissue;

wherein the cardiac conduction disturbance in the host is treated.

15. -- 18. (Canceled)

- 19. (Original) The method of claim 14, wherein the connexin protein is a connexin 43 protein.
- 20. (Original) The method of claim 14, wherein said introducing comprises implanting the recombinant cell into an infarct region of the cardiac tissue.
 - 21. (Original) The method of claim 14, wherein the recombinant cell is autologus to the host.
- 22. (Currently Amended) A method for treating a cardiac conduction disturbance in a mammalian host, the method comprising:

introducing into cardiac tissue of the host a therapeutically effective amount of a <u>recombinant</u> fibroblast skeletal muscle cell genetically modified to express a connexin 43 protein, said introducing

Atty Dkt. No.: UCAL-253US1

USSN: Not yet assigned

being effective to establish an electrical connection between the introduced recombinant skeletal muscle fibroblast cell and a myocardial cell of the host cardiac tissue;

wherein the cardiac conduction disturbance is treated.

23. - 24. (Canceled)

- 25. (Original) The method of claim 22, wherein said introducing comprises implanting the recombinant cell into an infarct region of the cardiac tissue.
- 26. (Currently Amended) The method of claim 22, wherein the recombinant skeletal muscle fibroblast cell is autologus to the host.

Atty Dkt. No.: UCAL-253US1 USSN: Not yet assigned

REMARKS UNDER 37 CFR § 1.111

Formal Matters

Claims 1, 6-8, 13, 14, 19-22, and 25-26 are pending after entry of the amendments above.

Claims 2-5, 9-12, 15-16, and 21-24 are canceled without prejudice.

Claims 1, 7, 8, 13, 14, 22 and 26 are amended. Support for these amendments is found in the specification and claims as originally filed.

The specification is amended to insert an abstract. Support for the abstract is found in the specification at page 3, line 31 to page 4, line 6.

Applicants respectfully request reconsideration of the application in view of the amendments and remarks made herein.

No new matter has been added.

Conclusion

Applicant submits that all of the claims are in condition for allowance, which action is requested. If the Examiner finds that a telephone conference would expedite the prosecution of this application, please telephone the undersigned at the number provided.

The Commissioner is hereby authorized to charge any underpayment of fees associated with this communication, including any necessary fees for extensions of time, or credit any overpayment to Deposit Account No. 50-0815, order number UCAL-253US1.

Respectfully submitted,

BOZICEVIC, FIELD & FRANCIS LLP

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Dec 22, 2004

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(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization International Bureau



(43) International Publication Date 20 November 2003 (20.11.2003)

PCT

(10) International Publication Number WO 03/094697 A2

(51) International Patent Classification7:

A61B

(21) International Application Number: PCT/US03/14304

(22) International Filing Date:

7 May 2003 (07.05.2003) - (81) Designated States (national): AE, AG, AL, AM, AT, AU,

(25) Filing Language:

English

(26) Publication Language:

PCT/US02/35932

English

(30) Priority Data:

60/379,140 10/291,202

8 May 2002 (08.05.2002) US " 7 November 2002 (07.11.2002) US

7 November 2002 (07.11.2002) US (74) Agent: FRANCIS, Carol, L.; Bozicevic, Field & Francis LLP, Suite 200, 200 Middlefield Road, Menlo Park, CA 94025 (US).

AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,

GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW. , (84) Designated States (regional): ARIPO patent (GH, GM,

KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, REGENTS OF THE UNIVERSITY OF CALIFORNIA GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

[US/US]; 1111 Franklin Street, 12th Floor, Oakland, CA 94604-5200 (US).

(72) Inventor; and

(75) Inventor/Applicant (for US only): LEE, Randall, J. -[US/US]; University of California, Cardiac Electrophysiology, Rm. MU429, 500 Parnasus Avenue, San Francisco, CA 94143 (US).

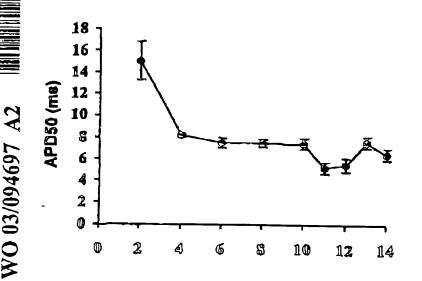
(71) Applicant (for all designated States except US): THE

Published:

without international search report and to be republished upon receipt of that report

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(54) Title: METHODS AND COMPOSITIONS FOR CORRECTION OF CARDIAC CONDUCTION DISTURBANCES



(57) Abstract: The invention provides methods for establishing electrical coupling between cardiomyocytes and recombinant cells which have been genetically engineered to express a gap junction protein, e.g., a connexin protein such as connexin 43 (Cx43) protein. The invention is based on the discovery that genetic modification of skeletal muscle cells to express a recombinant connexin, enables the genetically modified cells to establish electrocommunication with cardiac cells via gap junctions. The recombinant connexin-expressing can be used for repair of cardiac tissue and for treatment of cardiac disease by transplantation into cardiac tissue.

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Atty/Sec: CLF/MC

Atty Docket No. UCAL-253US1 Date Mailed: December 22, 2004

Application No.: Filing Date: Herewith (12.22.04)

Inventor(s): LEE, RANDALL J.

Title: "METHODS AND COMPOSITIONS FOR CORRECTION OF

CARDIAC CONDUCTION DISTURBANCES"

Enclosure(s):

- 371 Transmittal Des/Elect offices In duplicate (4 pgs.)
- Application Information (2 pgs.)
- Petition to Revive an Application Abandoned Unintentionally Under 37 C.F.R. '1.137(b) (1 pg.)
- Preliminary Amendment (6 pgs.)
- Copy of PCT Published Application WO 02/089731
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Alty Docket No. UCAL-253US1 Date Mailed: December 22, 2004 Application No.: Filing Date: Herewith (12.22.04)

Inventor(s): LEE, RANDALL J.

Title: "METHODS AND COMPOSITIONS FOR CORRECTION OF CARDIAC CONDUCTION DESTURBANCES"

DT03 Rec'd PCT/PT0 Enclosure(s):

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Carol L. Francis Bozicevic, Field & Francis LLP 1900 University Avenue, Ste. 200 East Palo Alto, CA 94303



Dear Ms. Francis:

This is in response to your letter received 27 April 2005, inquiring about the status of U.S. Scrial No. 10/519,128 as it relates to a "Petition to Revive an Application Abandoned Unintentionally" filed 22 December 2004. The petition in question has not yet reach the Office of PCT Legal Administration. To help expedite matters I would strongly suggest that you fax said petition addressed to the Office of PCT Legal Administration at (571) 273-0459. Please include proof of initial filing of petition, and a statement that second submission is a true copy of initial filing.

Wanda Banks

Paralegal Specialist

Office of PCT Legal Administration

ende Banks

Tel: (571)272-3277

WGB/wgb

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MAY 2 7 2005

Bozicevic, Field, & Francis 401-253451

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